What is claimed is:

1. A method for transferring a substrate in a processing system having at least one processing chamber coupled to a transfer chamber housing a robot, the method comprising:

teaching a robot to move to an exchange position defined in a processing system; and

correcting motion of the robot to compensate for a shift in the exchange position.

2. The method of claim 1, wherein the step of correcting further comprises:

monitoring a condition within the processing system;

determining the shift in exchange position based on the monitored condition; and

correcting robot motion to compensate for the determined shift in the exchange position.

3. The method of claim 2, wherein the step of monitoring further comprises:

sensing a change in temperature within a portion of the processing system.

4. The method of claim 2, wherein the step of monitoring further comprises:

sensing a change in state of the at least one processing chamber.

5. The method of claim 4, wherein the step of sensing the change in temperature further comprises:

sensing a change in state of a second processing chambers.

6. The method of claim 2, wherein the step of monitoring further comprises:

sensing a change in state of a second processing chamber different than a first processing chamber having the exchange position defined therein.

7. The method of claim 2, wherein the step of monitoring further comprises:

detecting a change in temperature of the at least one processing chamber.

8. The method of claim 7, wherein the step of detecting the change in temperature further comprises:

sensing a change in temperature of a second processing chamber.

9. The method of claim 7, wherein the step of detecting the change in temperature further comprises:

sensing a change in temperature of a processing chamber different than a processing chamber having the exchange position defined therein.

10. The method of claim 3, wherein the portion of the processing system is a facet of the transfer chamber through which the robot must extend to reach the exchange position.

11. The method of claim 10, wherein the step of sensing the change in temperature further comprises:

sensing a change in temperature of a different facet of the transfer chamber.

12. The method of claim 2, wherein the step of determining further comprises:

sensing a change in position of the processing chamber.

13. The method of claim 12, wherein the step of sensing the change in position of the processing chamber further comprises:

sensing a metric indicative of a position of a centerline of the processing chamber.

14. The method of claim 12, wherein the step of sensing the change in position of the processing chamber further comprises:

sensing a metric indicative of a position of a centerline of the transfer chamber.

15. The method of claim 2, wherein the step of determining further comprises:

resolving a change in the exchange position based on empirical data.

16. The method of claim 15, wherein the empirical data is representative of a change in at least one of position and orientation of the processing chamber relative to the transfer chamber due to thermal effects.

17. The method of claim 2, wherein the step of determining further comprises:

resolving a change in the exchange position based on modeled data.

18. The method of claim 17, wherein the modeled data is representative of a change in at least one of position and orientation of the processing chamber relative to the transfer chamber due to thermal effects.

19. The method of claim 2, wherein the step of monitoring the condition further comprises:

tracking time between state changes of at least one processing chamber.

20. The method of claim 2, wherein the step of determining the condition further comprises:

accounting for rates of thermal expansion.

21. The method of claim 1, wherein the step of correcting further comprises:

measuring a change in at least one of the position and orientation of the at least one processing chamber relative to the transfer chamber; and

adjusting motion of the robot to compensate for the detected changes.

21. The method of claim 1, wherein the step of correcting further comprises:

sensing a change in at least one of the position and orientation of the at least one processing chamber relative to the transfer chamber; and

adjusting motion of the robot to compensate for the sensed changes.

22. The method of claim 1, wherein the step of correcting further comprises:

resolving a change in at least one of the position and orientation of the at least one processing chamber relative to the transfer chamber; and

adjusting motion of the robot to compensate for the detected changes.

23. The method of claim 22, wherein the step of resolving changes further comprises at least one of modeling thermal expansion of the transfer chamber, modeling thermal expansion of the processing chamber, and utilizing empirical data that is representative of relative positions of the processing chamber relative to the transfer chamber due to thermal effects.

24. The method of claim 1, wherein the shift in the exchange position is due to a change in the thermal profile of the transfer chamber.

25. The method of claim 1, wherein the shift in the exchange position is due to a change in the thermal profile of at least one processing chamber.

26. A method for transferring a substrate in a processing system having at least a first processing chamber coupled to a transfer chamber housing a robot, the method comprising:

defining an exchange position of the first processing chamber;

sensing temperature of at least one component of the system that results in a shift in the exchange position;

resolving the shift in exchange position corresponding to the sensed temperature; and

correcting robot motion to compensate for the shift in the exchange position.

27. The method of claim 26, wherein the step of sensing further comprises:

sensing a temperature of at least one facet of the transfer chamber.

28. The method of claim 26, wherein the step of resolving further comprises:

determining a change in at least one of the position and orientation of a facet of the transfer chamber from which the temperature was sensed.

29. A method for transferring a substrate in a processing system having at least a first processing chamber coupled to a transfer chamber housing a robot, the method comprising:

teaching the robot to move to an exchange position defined in the first processing chamber relative to a predefined reference point within the transfer chamber;

detecting a shift in the exchange position; and

correcting the taught robot motion to compensate for the shift in the exchange position.

30. The method of claim 29, wherein the step of detecting further comprises:

sensing a temperature profile of the transfer chamber.

31. The method of claim 29, wherein the step of detecting further comprises:

modeling a temperature profile of the transfer chamber based on a change in state of the first processing chamber.

32. The method of claim 29, wherein the step of detecting further comprises:

modeling a temperature profile of the transfer chamber based on a change in state of a second processing chamber coupled to the transfer chamber.

33. The method of claim 29, wherein the step of detecting further comprises:

determining a temperature profile of the transfer chamber based on empirical data.

34. The method of claim 29, wherein the step of detecting further comprises:

determining a change in at least one of the position and orientation of a facet of the transfer chamber corresponding to a change in the sensed a temperature.

35. The method of claim 29, wherein the step of detecting further comprises:

sensing temperature of the transfer chamber at a plurality of locations.

36. The method of claim 29, wherein the step of detecting further comprises:

determining a change in at least one of position and orientation of the first processing chamber.

37. The method of claim 29, wherein the step of detecting further comprises:

determining a change in a position of the reference point defined in the transfer chamber.

38. A method for transferring a substrate in a processing system having at least a first processing chamber coupled to a transfer chamber housing a robot, the method comprising:

establishing a predefined reference point within the transfer chamber and an exchange position of the first processing chamber;

teaching a robot to move to the exchange position;

monitoring relative positional change between the reference point and exchange position;

correcting the taught position of the robot in response to the relative positional change, thereby allowing the robot to arrive at the exchange position.

39. The method of claim 38, wherein the step of monitoring the relative positional change between the reference point and exchange position further comprises:

detecting a change in lateral position of a substrate support disposed in the first processing chamber.

40. The method of claim 38, wherein the step of monitoring the relative positional change between the reference point and exchange position further comprises:

detecting a change in lateral position of the reference point of the transfer chamber due to thermal changes of the transfer chamber.

41. A substrate processing system comprising:

a transfer chamber;

a processing chamber coupled to the transfer chamber;

a robot disposed in the transfer chamber and adapted to transfer substrates between the transfer chamber and the processing chamber;

at least one sensor adapted to provide a metric from which a change in position between the transfer chamber and the processing chamber may be resolved; and

a controller coupled to the robot and adapted to provide instructions for correcting the robot's motions in response to the metric provided by the sensor.

42. The substrate processing system of claim 41, wherein the at least one sensor provides temperature information of the transfer chamber.

43. The substrate processing system of claim 41, wherein the at least one sensor further comprises a plurality of temperature sensors providing metrics indicative of a temperature profile of the transfer chamber.

44. The substrate processing system of claim 41, wherein the at least one sensor provides information indicative of a position of a substrate support disposed within the processing chamber.

45. The substrate processing system of claim 41, wherein the at least one sensor provides information indicative of a position of a reference point from which robot motion is referenced.